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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,277	11/17/2003	Peter J. Hopper	P05732	6043

7590 03/16/2005

Jurgen Vollrath  
588 Sutter Street # 531  
San Francisco, CA 94102

EXAMINER

PRENTY, MARK V

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

14A

**Office Action Summary**

Application No.

10/716,277

Applicant(s)

HOPPER ET AL.

Examiner

MARK V. PRENTY

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 10-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

This Office Action is in response to the papers filed on November 17, 2003.

The drawings filed on November 17, 2003 are informal. Formal replacement drawings are required in response to this Office Action. Note that what appears to be Fig. 2 incorrectly contains a "Figure 1" label inside the box. Correction is required.

Claims 1, 3 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Widmann et al. (United States Patent 6,404,034 – hereafter Widmann).

With respect to independent claim 1, Widmann discloses a MOS transistor with reduced drain capacitance (see the entire patent, including the Fig. 1 disclosure) comprising a drain 5/8, and a lateral isolation trench 3 extending at least partially underneath the drain.

Claim 1 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Widmann.

With respect to dependent claim 3, Widmann's trench is filled with an insulator 4.

Claim 3 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Widmann.

With respect to dependent claim 4, Widmann's insulator 4 is a high step coverable insulating material (note Widmann's claim 5).

Claim 4 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Widmann.

Claims 1, 3, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawakita et al. (United States Patent 4,685,198 – hereafter Kawakita).

With respect to independent claim 1, Kawakita discloses a MOS transistor with reduced drain capacitance (see the entire patent, including the Fig. 2 disclosure) comprising a drain 52 (or 56), and a lateral isolation trench 40 extending at least partially underneath the drain.

Claim 1 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Kawakita.

With respect to dependent claim 3, Kawakita's trench is filled with an insulator 42.

Claim 3 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Kawakita.

With respect to independent claim 8, Kawakita discloses a method of forming a laterally extending trench in a semiconductor material underneath a drain of a MOS transistor (see the entire patent, including the Fig. 2 disclosure), comprising choosing a predetermined crystal orientation (see column 4, lines 27-29), etching a vertically extending STI region 28 next to (what will be) the drain 52 (or 56), and using an anisotropic etchant to etch a trench 40 extending laterally from the STI (see column 5, lines 3-8).

Claim 8 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Kawakita.

With respect to dependent claim 9, Kawakita's choosing the crystal orientation includes choosing a wafer with a <100> orientation (see column 4, lines 27-29).

Claim 9 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Kawakita.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimbo et al. (United States Patent 4,638,552 – hereafter Shimbo).

With respect to independent claim 1, Shimbo discloses a MOS transistor with reduced drain capacitance (see the entire patent, including the Fig. 7 disclosure) comprising a drain 80, and a lateral isolation trench 72 extending at least partially underneath the drain.

Claim 1 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Shimbo.

With respect to dependent claim 2, Shimbo's trench 72 is filled with air.

Claim 2 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Shimbo.

Claims 5-7 and 10-15 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not disclose the allowable MOS transistor with reduced drain capacitance taken as a whole, including the lateral isolation trench.

Registered practitioners can telephone the examiner at (571) 272-1843. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (571) 272-2800.

  
Mark V. Prenty  
Primary Examiner